

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400



Th 19c

STAFF RECOMMENDATION**ON CONSISTENCY DETERMINATION**

Consistency Determination No.	CD-094-04
Staff:	LJS-SF
File Date:	12/20/2004
60 th Day:	2/18/2005
75 th Day:	3/05/2005
Commission Meeting:	2/17/2005

FEDERAL AGENCY: U.S. Air Force

DEVELOPMENT

LOCATION: Vandenberg Air Force Base, Santa Barbara County (Exhibits 1-2)

DEVELOPMENT

DESCRIPTION: Five-Year Beach Management Plan to protect the federally-threatened Western snowy plover

SUBSTANTIVE FILE

DOCUMENTS: See Pages 25-26

EXECUTIVE SUMMARY

The U.S. Air Force has submitted a consistency determination for a five-year (2005-2009) Beach Management Plan, including restrictions to beach access on Vandenberg Air Force Base in order to protect the western snowy plover, a federally listed threatened species. As was the case for the 2004 interim plan, the Air Force proposes that the following beaches remain open for recreational use during the March 1 through September 30 snowy plover nesting season: (1) public access to 0.5 mile of Surf Beach in the vicinity of Surf Station; (2) military personnel and limited civilian access to the northernmost 0.25 mile of Wall Beach; and (3) military and limited

civilian access to the northernmost 0.5 mile of Minuteman Beach. The five-year Beach Management Plan also provides for beach closure enforcement, plover monitoring, public education, predator control, and exotic plant removal. The Air Force proposes the following revisions from previous interim plans: (1) set the violation limit at Minuteman Beach at ten occurrences (increased from the previous limit of five); (2) enforce beach rules and regulations during open and closed beach periods on a less predictable basis in order to place enforcement personnel when and where enforcement is most needed; (3) open the aforementioned beaches seven days a week (increased from the previous Friday through Monday schedule) and for the same hours as before, 8 AM to 6 PM; and (4) replace in the same location the existing fence along the back dunes trail from Ocean Park to the open area at Surf Station.

The Air Force has worked with the U.S. Fish and Wildlife Service (Service) and the Commission for a number of years on the conflict caused by snowy plover habitat protection and public recreational use of the beaches at Vandenberg. Both of these needs are critical along this stretch of coast. Vandenberg provides highly valuable nesting habitat for the plover and is vital to the recovery of the species. However, Vandenberg is also located on a stretch of coast that has limited public access opportunities.

In reviewing similar restrictions in the past, the Commission has found these restrictions to be consistent with the public access and recreation (Sections 30210, 30213, and 30214) and the habitat (Section 30240) policies of the Coastal Act. Past monitoring data indicated that the snowy plover population has been unstable and the Air Force determined that it was necessary to implement measures that are more protective of the plover. The proposed closures and restrictions are a necessary component of the Air Force's proposed five-year Beach Management Plan. The plan is consistent with access policies of the Coastal Act, which allows habitat protection to be a basis for limits on access and recreation opportunities.

The sandy beaches on Vandenberg support nesting snowy plovers, a federally listed threatened species. In addition, the Service has designated these beaches as "critical habitat" for the snowy plover. Therefore, the snowy plover habitat on Vandenberg is an environmentally sensitive habitat area (ESHA). The proposed five-year Beach Management Plan allows the Air Force to minimize human disturbances to plover nests by restricting public and military access. In addition, the plan provides for predator management to reduce plover losses from coyotes, small mammals, crows, ravens, raptors, and other predatory birds. The plan includes measures to reduce predation and remove predators, using both non-lethal and lethal techniques, in manner that protects the area's ecology. The management plan will not significantly disturb beach habitat and is consistent with ESHA policy of the CCMP (Coastal Act Section 30240).

STAFF SUMMARY AND RECOMMENDATION

I. Project Description. The U.S. Air Force proposes a five-year (2005-2009) beach management plan for the western snowy plover nesting season. The proposed plan provides for restrictions to beach access on Vandenberg Air Force Base (VAFB) in order to protect the snowy plover, a federally-listed threatened species (**Exhibits 1-2**). The beach closures will occur during

the plover's nesting season, March 1 through September 30. The Air Force proposes to implement essentially the same management elements that the Commission has reviewed and concurred with in recent federal consistency submittals (CD-019-00, CD-089-02, and ND-007-04) but with proposed modifications to the enforcement element of the beach management plan (see enforcement elements Nos. 10 and 11, below).

The beach access elements of the plan are as follows:

Vandenberg proposes to close all Vandenberg beaches where western snowy plovers breed between 1 March and 30 September, except for the following three distinct areas. These areas are the same as those designated for recreational access during the 2000-2004 nesting seasons.

- *Public access to approximately 0.5 mile of Surf Beach in the vicinity of Surf Station, using the existing access trails from Surf Station and Ocean Park, and the same closed area boundaries delineated in the 2000-2004 nesting seasons. [Exhibit 3]*
- *Military access¹ only to the northernmost 0.25 mile of Wall Beach. The Wall Beach access trail will be routed to the northern edge of the parking lot. Access will be allowed only from this access trail northward along the bluff-backed beach to protect all dune-backed habitat on Wall Beach. [Exhibit 3]*
- *Military access only to the northernmost 0.5 mile of Minuteman Beach. This area is the bluff-backed beach north of the existing access trail where western snowy plover nesting has not been known to occur to date. Minuteman Beach south of the access trail will be closed. [Exhibit 4]*

All other beach areas on Vandenberg supporting nesting snowy plovers will be closed from 1 March to 30 September. In all, 11 miles of nesting habitat on Vandenberg will be protected during the nesting season.

The rules and enforcement elements of the plan are as follows (proposed modifications from previous interim plans are underlined):

The following measures implemented during the 2001-2004 nesting season will be continued from March 1 through September 30 each year:

1. *Fencing and bilingual (English/Spanish) signs will be placed to delineate closed beach and dune areas. Fences in beach areas will be erected perpendicular to the shoreline and will extend from as close to the water as practical to the upper dunes. Fences will be inspected on at least a weekly basis, in coordination with USFWS-approved snowy plover monitors.*

¹ In this context, military access encompasses active duty military and their dependents, retired military and their dependents, and Department of Defense and Vandenberg AFB civilian employees.

2. *Nixalite® will be installed on all posts, fencing and beach shelters where practicable to minimize the attraction of these structures to avian predators.*

3. *Any beach area where fencing is impracticable (i.e., very near the water line) will be posted as closed with bilingual (English/Spanish) signs.*

4. *The following beach rules apply to all open beach areas year-round:*

*No camping
No littering
No fireworks
No recreational off-road vehicles*

5. *In addition to the above, the following beach rules will apply to all open beach areas during the snowy plover breeding season and will be posted:*

*No fires
No pets
No horses (except Vandenberg's horse patrol, which will access restricted areas only in the wet sand)
No kite flying
No windsurfing or parasailing*

6. *All enforcement will be done on foot or horseback, and will be restricted to the wet sand to the maximum extent practicable. ATVs will be used only when essential for specific enforcement, emergencies, or mission requirements. In those instances, ATVs will be restricted to established trails and the wet sand.*

7. *Small shelters will be placed at each boundary fence, to protect patrol personnel from wind and rain. Shelters will be placed prior to March 1 each year and removed after September 30, to avoid disturbing nesting snowy plovers.*

8. *Enforcement personnel will issue citations to unauthorized individuals observed entering restricted areas and/or not complying with beach regulations.*

9. *Vandenberg will continue to implement protocols developed for coordination between enforcement personnel and snowy plover monitors. These measures clearly define procedures for reporting and documenting violations. In addition, monitors will be provided with satellite phones to facilitate timely communications with enforcement personnel.*

10. *Each open beach area will be subject to a limit on the number of violations during each nesting season. Open beach areas will be closed to all access if enforcement personnel document that violations have exceeded the following number of trespasses:*

Surf Beach – 50 occurrences

Wall Beach – 10 occurrences

Minuteman Beach – 10 occurrences (increased from the previous limit of 5)

We believe that the increase in violation limit at Minuteman Beach is reasonable, given that snowy plover nest numbers (and therefore potential impact of violations) is actually less than at Wall Beach, which also has a limit of 10 violations.

11. Enforcement of beach rules and restrictions will be conducted as follows: Enforcement personnel will patrol beaches during both open and closed periods. Enforcement efforts will emphasize personnel presence when and where it is most needed, i.e., where violations are occurring or are deemed most likely to occur. In 2003 and 2004, most violations occurred during closed periods. By making enforcement presence less predictable and adjusting enforcement presence to times and locations where violations are occurring, we hope to improve compliance while reducing costs over time and encouraging beach visitors to comply with signs and fences. By reducing enforcement costs, VAFB will be better able to support more days and/or hours of beach access. During the 2001-2004 nesting seasons, commitment to full-time enforcement during all open beach hours made it cost-prohibitive for VAFB to open beaches more than four days per week, ten hours per day (Friday through Monday, 8:00 AM to 6:00 PM). Increased flexibility in assigning enforcement personnel should enable VAFB to increase days and hours of beach access as long as compliance with beach rules is adequate. Enforcement personnel will continue to document violations and cite observed violators. If the violation limit is exceeded on any beach, that beach will be closed for the remainder of the nesting season (through September 30). This will ensure that violations do not become excessive on any of the beaches.

12. We propose to replace the existing fence along the back dunes trail from Ocean Park to the open area at Surf Station. The existing fence material is wood and wire drift fence. This material is easily broken and pushed down, and many violations have occurred from people going through or over this fence despite signs stating that the area behind it is closed. Replacing this fence in the same location with slatted chain link or non-climb welded wire will make it more resistant to vandalism and trespass.

The education elements of the plan are as follows:

- 1. Vandenberg will continue to encourage community volunteer docent programs that provide education to beach visitors on the snowy plover, its habitat, and beach rules.*
- 2. Kiosks at the entrances to Surf and Wall Beach will provide educational information on snowy plovers and beach access restrictions.*

3. The educational brochure and program previously approved by the Service will be updated as needed and provided to base personnel and the public.

The predator management element of the plan is as follows:

*The Air Force will continue to implement predator management 2005-2009 in accordance with the Service-approved Predator Management Plan. Since it was initially developed in coordination with the Service in 2001, we have updated the Predator Management Plan in response to changing conditions, particularly the recent incursion of common ravens (*Corvus corax*) on north beaches. We will continue to implement the Predator Management plan and update it as needed in coordination with the Service.*

The monitoring element of the plan is as follows:

Vandenberg proposes to continue its monitoring program as in prior years. In 2004, we obtained Service approval to incorporate a study by the University of California at Santa Barbara, analyzing the habitat and invertebrate prey base of snowy plovers on base beaches. We will continue these studies in conjunction with the ongoing monitoring program. We are also studying environmental and climatic factors that may be affecting snowy plover use of VAFB beaches. These studies will help us to better understand the factors contributing to snowy plover distribution and nest success on Vandenberg, so that we can concentrate our management efforts to effectively support snowy plover recovery.

The consistency determination also states that the following additional measures will be implemented to reduce the potential impacts to snowy plovers from recreational access in open beach areas, and to reduce scavenging by predators:

- 1. Animal-proof trash containers will be provided near entrances to all open beach areas. These will be emptied and cleaned as needed to minimize attracting predators.*
- 2. Biweekly beach inspections will be done to remove trash from open beach areas.*
- 3. VAFB will continue to pursue opportunities for enhancement of snowy plover habitat through removal of non-native vegetation and revegetation with native dune species, as described in the draft Habitat Restoration Plan that is currently under review by the Service.*

II. Status of Local Coastal Program. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the LCP has been certified by the Commission and incorporated into the California Coastal Management Program (CCMP), it can provide guidance in applying Chapter 3 policies in light of local circumstances. If the LCP has not been incorporated into the CCMP, it cannot be used to guide the Commission's decision, but it can be used as background information. The County of Santa Barbara's LCP has been certified by the Commission and incorporated into the CCMP.

III. Federal Agency's Consistency Determination. The U.S. Air Force has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

IV. Staff Recommendation.

The staff recommends that the Commission adopt the following resolution:

MOTION: I move that the Commission **concur** with consistency determination CD-094-04 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

Staff Recommendation:

The staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution to Concur with Consistency Determination:

The Commission hereby **concurs** with the consistency determination by the U.S. Air Force, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

V. Findings and Declarations.

The Commission finds and declares as follows:

A. Public Access and Recreation. Section 30210 of the Coastal Act provides for maximizing public access and recreation opportunities, providing that such activities take into account natural resource protection needs. Section 30213 provides for protection of lower cost visitor and recreational facilities. Section 30214 elaborates on access management considerations, providing that:

(a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

...

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area....

The access policies of the Coastal Act clearly provide for managing public access and recreational opportunities in order to protect natural resource areas. However, in order to understand the significance of the impact of the proposed restrictions, the Commission must analyze these access restrictions in the context of the existing access resources in the area. Access to the northern Santa Barbara County coast is one of the more limited areas of the California coast. Between Gaviota and Point Sal is a 64-mile stretch of coastline that is only fully open to the public at two locations: Surf Beach and Jalama Beach (**Exhibit 1**). There are other limited access opportunities on Vandenberg, but these require permits from the Air Force Base and are limited to fishing. All of these beaches are subject to temporary closures during missile launches at Vandenberg.

The Commission has a long and extensive history of concern over the limitations on public access along this stretch of the coast, including the Hollister and Bixby Ranch areas. Its concerns include insuring consistency of new development with the public access provisions of the Coastal Act in the review of permits and LCPs. Although the Santa Barbara County LCP contains public access requirements that may be triggered by development at Bixby Ranch, such development has not occurred and that area remains inaccessible. In addition, the Commission concurred with a consistency determination (CD-21-82) by the Air Force for the construction of a Space Shuttle launch facility, in part, because it included additional public access at Ocean Beach and north of Jalama Beach. In another consistency determination (CD-5-89), the Commission staff recommended objection (the Air Force withdrew the project at the hearing) to a proposal to construct a new launch facility because of impacts, including closures, to the use of Jalama Beach. Finally, the Commission objected to a consistency determination (CD-65-90) for the Air Force's proposed acquisition of development rights on Bixby Ranch, because it affected the local government's ability to implement the access provisions of its LCP. These actions demonstrate that protecting existing and ensuring new access opportunities in this area of the coast is a high priority for the Commission.

Although Vandenberg AFB provides critically needed public access opportunities in an area where access is limited, it is equally, if not more, critical to the survival of the snowy plover (**Exhibits 5 and 6**). As discussed in the ESHA section below, Vandenberg provides important habitat that is necessary for the survival and recovery of the bird. Because of the historic and geographic limitations on public access to the shoreline, snowy plover issues on publicly open beaches on Vandenberg are complex and difficult issues for the Commission. The Commission is forced to balance protecting snowy plover habitat that the Service has identified as critical to the survival and recovery of the species and ensuring maximum public access to the shoreline.

In its *Biological Opinion* for the Air Force's 2003 Interim Beach Management Plan, the Service described impacts from the public recreational use of the beach as follows:

The Pacific coast population of the western snowy plover has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to shoreline stabilization and urban development. The habitats preferred by this species are

*subject to erosion and accretion, making them highly susceptible to degradation by construction of seawalls, breakwaters, jetties and other developments that interfere with the natural coastal processes. The encroachment of European beachgrass (*Ammophila arenaria*) has also led to habitat loss. Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Indirect impacts from these activities include disturbance of western snowy plover adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner et al. 1986). Western snowy plovers do not usually abandon their nests because of wind without another compounding factor such as human disturbance (Page, pers. comm.).*

Human activities can also interfere with foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick-rearing behaviors or by causing intolerable stresses directly to the chicks (Cairns and McLaren 1980). For example, separation of chicks and their parent can lead to lethal exposure to wind and cold temperatures or disturbance that interferes with foraging could result in the starvation of western snowy plover chicks. In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush western snowy plovers and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of western snowy plover chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Cairns 1982). The available information regarding the energetics of western snowy plovers is inadequate to assess the likelihood that such injury or mortality would result.

In 1998, a pattern of increased chick loss over weekends (when increased human use of beach areas occurs) was observed by researchers at Point Reyes National Seashore. In response to this observation, a protocol for collecting data on chicks was standardized in 1999 and 2000. Chicks were observed on Fridays and then again on Mondays (or the day after a holiday). Chick loss over weekends was over 1.5 times the weekday loss. Data from 1999 and 2000 show almost identical trends (Page, pers. comm. 2001).

Additionally, since 1997 (when regular monitoring of fledging success began), the monitoring reports for snowy plovers on Vandenberg have documented that increased restrictions to recreational use on the subject beaches corresponds with increases in fledging success.

The graph on the following page illustrating 2004 fledging success is from the 2004 *Final Report*:

The estimated base wide chick fledging success in 2004 (19%) was lower than any prior year on Vandenberg AFB with the exception of 1998 (6%)(Figure 13). Based on this fledging rate and the estimated 578 chicks that hatched, at least 111 chicks fledged from

Vandenberg AFB in 2004. However, this number may not represent an accurate estimate given (1) the difficulty of detecting all chicks in a brood that may be present at a given time; and (2) that the fledging rate is extrapolated from confirmed banded chicks that fledged, and as mentioned above, this number may be underestimated as a result of not being able to distinguish between individual brood members once fledging occurs.

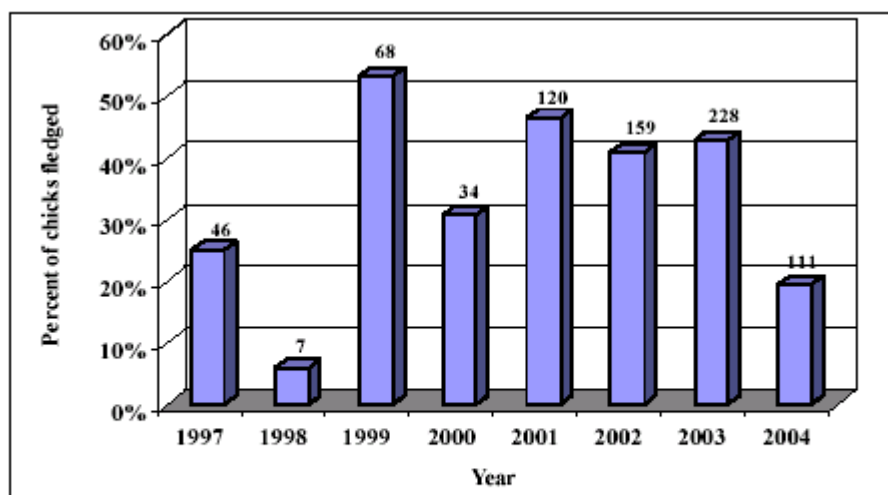


Figure 13. Fledging success on Vandenberg AFB, 1997 to 2004. Number above columns represents total number of chicks estimated to have fledged on Vandenberg AFB in each of the breeding seasons.

The 2004 *Final Report* also provides data on nest hatching success on Vandenberg, as shown below in Table 8 and Figure 8.

Table 8. Distribution and clutch hatch success rate of known fate nests on Vandenberg AFB, 1994 to 2004.

Year	North Beaches	Purisima Beaches	South Beaches	Vandenberg Total
1994	28%	75%	28%	31%
1995	31%	100%	46%	43%
1996	57%	93%	48%	55%
1997	22%	93%	11%	19%
1998	42%	50%	29%	37%
1999	78%	78%	36%	54%
2000	47%	0%	28%	32%
2001	51%	83%	53%	53%
2002	45%	80%	48%	47%
2003	36%	43%	66%	51%
2004	32%	75%	39%	37%

Percentages rounded to nearest whole number.

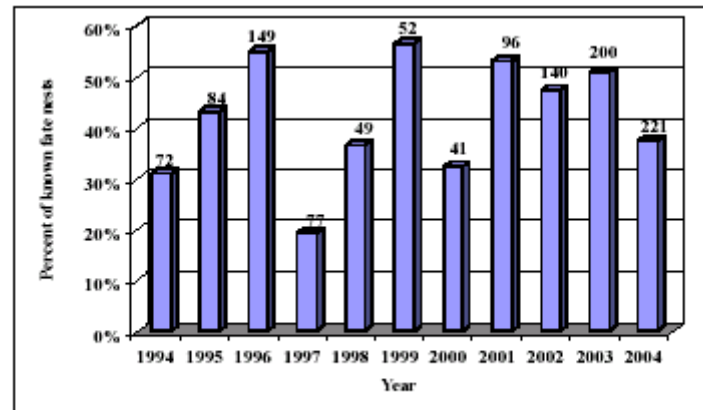


Figure 8. Clutch hatch success on Vandenberg AFB, 1994 to 2004.

The 2004 *Final Report* interprets the above table and graph as follows:

Clutch hatch success in North Beaches (32%) was the second lowest since full season monitoring began in 1994. The lower rate in 2004 is the result of severe corvid predation from early May to late June. This is similar to what was seen in 2003 . . .

Historically, Purisima Beaches has experienced the lowest nest failure of all the beaches as a result of the majority of the nests being established within Purisima Colony, an area protected by an electric fence. However, in 2004, only four of the eight nests (50%) found in Purisima Beaches were established within Purisima Colony, and two of these nests were unsuccessful . . .

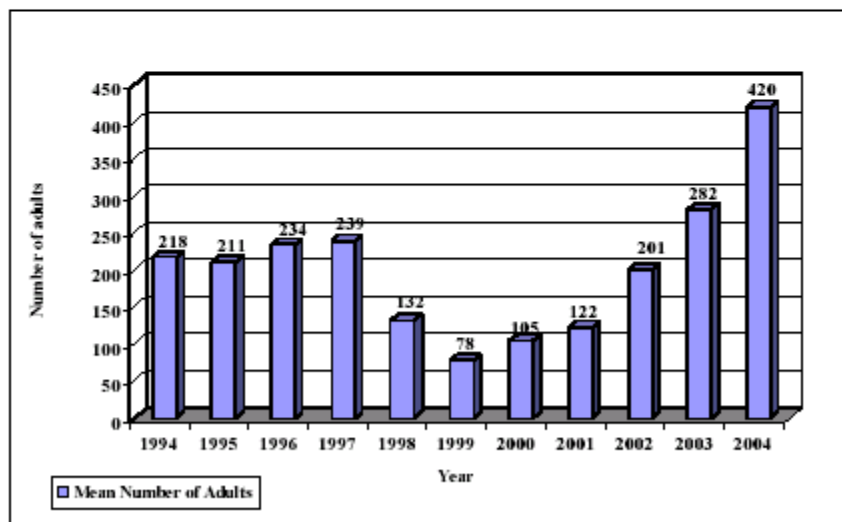
Clutch hatch success on South Beaches (39%) was significantly lower than in 2003 (66%), and also lower than in 2002 (48%) and 2001 (53%). The lower clutch hatch success rate in South Beaches was the result of two coyote predation events that occurred between mid-May and early June and from late June through early August. In addition, nest losses to high tides were significant on South Beaches, where 18% (66) of known nest fates were lost throughout the 2004 season . . .

The Vandenberg AFB population of the western snowy plover has risen and fallen over the past decade. The population declined from 242 adult birds in 1991 to a low of 78 birds in 1999. However, with the implementation and enforcement of beach access and recreation restrictions at Vandenberg AFB since the year 2000, the snowy plover population has increased steadily to 420 adult birds in 2004. The 2004 *Final Report* includes the table and two graphs on the following pages which illustrate the mean population of snowy plovers and their nests at Vandenberg AFB.

Table 2. Adult snowy plovers observed during the May and June censuses, 1994 to 2004.

Year	Early May	Late May	Early June	Late June	Mean	% Change Over Prior Year	% Change in 2004
1994	237	--	199	217	218	n/a	93%
1995	213	234	193	202	211	-3%	99%
1996	230	229	234	244	234	11%	79%
1997	258	196	256	245	239	2%	76%
1998	103	130	132	163	132	-45%	218%
1999	91	64	67	89	78	-41%	438%
2000	98	106	107	109	105	35%	300%
2001	115	100	123	150	122	16%	244%
2002*	222	213	174	195	201	65%	109%
2003	344	256	295	232	282	40%	49%
2004	363	420	466	431	420	49%	n/a

*In 2002, two censuses were completed in late May and another two in early June. Migrant birds were already observed during late June.

**Figure 4.** Mean number of adult snowy plovers censused on Vandenberg AFB, 1994 to 2004.

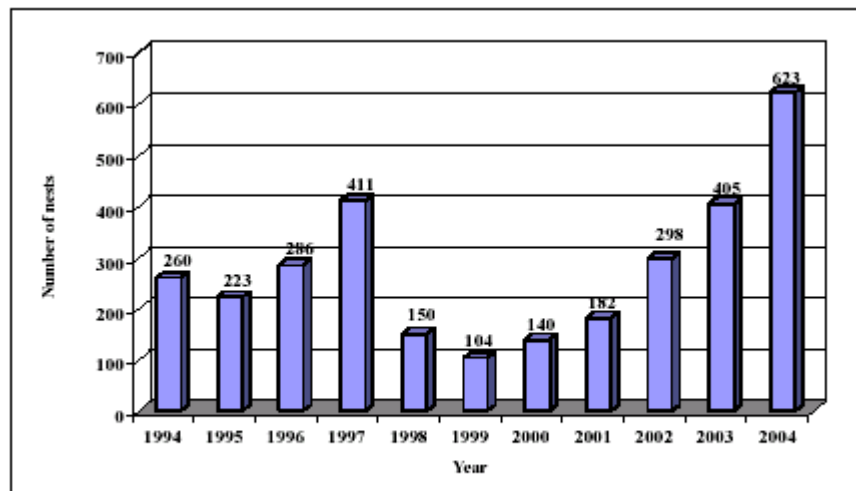


Figure 5. Number of nests located on Vandenberg AFB, 1994 to 2004.

The Air Force states in its consistency determination that:

In 2000, VAFB implemented an interim beach management plan, whereby beach access was modified from linear restriction to a sectional restriction, a modification with which the Commission concurred (CD-19-00). This interim beach management plan was modified in 2001 and 2002 to improve enforcement and still provide the public with recreational beach access. The enhanced enforcement implemented in 2001 and 2002 was highly effective in reducing violations, and was continued into 2003 and 2004 . . .

Monitoring data indicates that the management implemented by VAFB from 2001 – 2004 contributed to increased snowy plover populations and enhanced nesting success (Attachments 3 and 4). The breeding population of snowy plovers on VAFB has rebounded from a low of 78 adult plovers in 1999 to 420 adult plovers in 2004. The highest rates of population growth have occurred on South and Wall beaches, which together extend 1.1 miles north and 3.7 miles south of the Santa Ynez River mouth and include public access beach areas west of Ocean Park and the Surf train station. This occurred while still maintaining public beach access, although the area or permitted access was much reduced over what was available prior to 2000.

As a part of this consistency determination, the Air Force proposes to modify the enforcement element of the Beach Management Plan:

VAFB's proposed plan would give the Air Force greater discretion in assigning enforcement personnel to base beaches. Enforcement presence would continue to be strong, particularly at Surf Station and Ocean Park. However, constant enforcement presence is extremely expensive, and it is the high cost of enforcement that resulted in limited days and hours of beach access during snowy plover nesting season from 2001 to 2004 (Friday through Monday only, 8:00 AM to 6:00 PM). Reducing enforcement costs, and increased flexibility

in assigning enforcement personnel to beach areas with the greatest need, will provide for a more sustainable program and potentially VAFB to open the designated beach areas every day. This would benefit beach visitors and also help to encourage snowy plovers to nest in the closed areas of the beach. In 2004, a record 36 nests were established in the open area on Surf Beach, and many of those were initiated Tuesday through Thursday when the beach was closed. Consistency in open versus closed areas is beneficial to both beach visitors and snowy plovers.

The Air Force's December 2004 *Biological Assessment* for the proposed Beach Management Plan further addresses the modifications to the enforcement element:

Beginning in 2001, VAFB instituted violation limits and began an enhanced enforcement program that has proved effective in reducing violations of closed beach areas (Figure 2). Strong enforcement personnel presence has been an important factor in reducing violations. However, this is also very expensive, costing the Air Force in excess of \$225,000 each year. As beach visitors become more familiar with the seasonal restrictions, we should be able to reduce enforcement personnel presence while still achieving an acceptable level of compliance. VAFB will continue to investigate all potential violations, document confirmed violations, and issue citations to all identified violators. Violation limits will remain in place, and beaches will be closed if violation limits are exceeded . . .

Most violations, particularly in 2003 and 2004, occurred during closed beach days (Tuesday through Thursday) and outside open beach hours Friday through Monday. Due to cost, it was not feasible for VAFB to have more than occasional random patrols after-hours while still maintaining full-time patrols during open beach periods. We expect fewer after-hours violations if enforcement presence is less predictable and after-hours patrols can be increased. Therefore, VAFB will manage beach patrols as an adaptive program, adjusting the level and location of enforcement presence in response to actual levels of compliance or non-compliance. The program will be evaluated each year, or more often if necessary, in coordination with the Service. [see Page 15 for 2000-2004 violation summary]

The Vandenberg AFB wildlife biologist further clarified for Commission staff that under the proposed five-year Beach Management Plan, the Air Force will expand the days that Surf, Wall, and Minuteman beaches are open to the public and military personnel from the current four days (Friday through Monday) to seven days a week; the open hours will remain 8 AM to 6 PM (N. Francine, pers. communication, Jan. 27, 2005). The U.S. Fish and Wildlife Service concurs with this decision to open the beaches seven days a week and to implement the modifications to the enforcement element. The Service and the Air Force believe that a more random enforcement presence holds the potential to further reduce violations of the Vandenberg beach management regulations. In addition, the two agencies also believe that by having people on the open beaches on a daily basis will curtail the establishment of snowy plover nests at these sites, reduce the potential for plover-human conflict at these sites, and encourage the plovers to establish nests on those beaches that are closed to all recreational activity during the March-September nesting season.

Source: Biological Assessment, Western Snowy Plover Management on Vandenberg Air Force Base, Proposed 5-Year Plan, 2005-2009 [Updated 15 Dec 04]

However, as in the previous interim beach management plans concurred with by the Commission, the proposed five-year plan provides for the option of closing all the beaches to recreation use if the Air Force cannot meet its enforcement commitments. The Air Force could also reduce the open beach days back to the existing Friday-Monday schedule. The Air Force proposes to modify the current enforcement plan (described above) and will now place personnel where and when they are most needed to protect snowy plovers and their habitat, rather than the more predictable enforcement schedule previously used along Vandenberg's open beaches. The determination of violations of the beach regulations will not be limited to the number of people cited, and will continue to include documentation based on footprints, trash, or other evidence of human use.

While the Air Force's current proposal is a five-year Beach Management Plan, the consistency determination states that annual review, evaluation, and adjustment would still be conducted as in previous years. The Air Force will continue to produce annual monitoring reports on the status of the plover and recreational beach management at Vandenberg AFB, and the Commission and the general public will continue to receive those reports, and provide comments when necessary. As is typical when the Commission reviews consistency determinations for multi-year management and/or development plans, should the Air Force determine that significant modifications to the proposed five-year Beach Management Plan are required during the life of the plan (e.g., adverse changes to the snowy plover population or its nesting habitat, unexpected recreational use conflicts, reductions in funding for monitoring and/or enforcement), or should the Commission determine that the proposed five-year plan is having an effect on coastal resources substantially different than originally described in this consistency determination, the Air Force will need to prepare and submit to the Commission a new consistency or negative determination for those modifications and/or those unexpected effects.

In conclusion, the Commission finds that the proposed beach restrictions (including the modified enforcement plan and the opening of designated beach areas to the public seven days a week) are consistent with the public access and recreation policies of the Coastal Act because they are necessary to protect the federally-threatened western snowy plover. Therefore, the Commission finds that the proposed five-year Beach Management Plan is consistent with the public access and recreation policies (Sections 30210, 30213, and 30214) of the Coastal Act.

B. Environmentally Sensitive Habitat. Section 30240(a) of the Coastal Act provides that:

Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

1. Description of the ESHA. The U.S. Fish and Wildlife Service listed the Pacific Coast population of the Western snowy plover as "threatened" in March 1993 under the Endangered Species Act (ESA) of 1973, as amended. The ESA mandates federal agencies, such as the Air Force, to protect snowy plovers on their land and enforce the provisions of the ESA, which prohibit accidental and intentional take. The ESA also places a proactive requirement on all federal agencies to participate in the recovery of the species.

The beaches on Vandenberg provide both nesting and wintering habitat for the snowy plover. There are approximately 12.5 miles of beach used by the plover on the base and the Service has listed all of these beaches as critical habitat for the snowy plover. In its most recent *Biological Opinion* (May 12, 2003), the Service described the importance of Vandenberg to the recovery of the snowy plover as follows:

Since the first comprehensive surveys for western snowy plovers in western North America in the late 1970s, Vandenberg AFB has consistently held one of the largest concentrations of breeding western snowy plovers along the west coast of the United States (Page and Stenzel 1981, Page et al. 1991). Vandenberg AFB provides one of the greatest opportunities for recovery of the western snowy plover throughout its range because it has consistently supported one of the largest concentrations of breeding individuals throughout the species' range, has the largest continuous mainland coastal habitat under Federal ownership, and is expected to be able to support 400 adult birds during the breeding season.

Thus, the Commission finds that the sandy beaches on Vandenberg that provide nesting habitat for the snowy plover are ESHAs under the Coastal Act.

2. Access Restrictions. Section 30240 of the Coastal Act restricts the types of uses within an ESHA to activities that are dependent on the sensitive resources. In this case, the Air Force proposes to restrict beach recreation activities in order to protect the snowy plover. In the 2003 *Biological Opinion*, the Service discussed impacts of recreational activities on the snowy plover:

Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Indirect impacts from these activities include disturbance of western snowy plover adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner et al. 1986). Human activities can also interfere with foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick-rearing behaviors or by causing intolerable stresses directly to the chicks (Cairns and McLaren 1980). ... In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush western snowy plovers and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of western snowy plover chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Cairns 1982). In 1998, a pattern of increased chick loss over weekends (when increased human use of beach areas occurs) was observed by western snowy plover researchers at Point Reyes National Seashore. Chicks were observed on Fridays and then again on Mondays (or the day after a holiday). Chick loss over weekends was over 1.5 times the weekday loss. Data from 1999 and 2000 show almost identical trends (Page, pers. comm.).

The Service's 2003 *Biological Opinion* describes the effects on plovers from recreational activities on the beach. Based on this opinion, the Air Force determined that it is necessary to significantly reduce beach recreational activities in order to prevent continued decline of plover numbers and provide adequate protection of the ESHA. Therefore, the Commission finds that the proposed project is dependent on the sensitive resources.

Section 30240 of the Coastal Act also requires activities within an ESHA to avoid significant disruption to the sensitive habitat. The proposed project will reduce the beach recreation activities within the ESHA. As described above, these activities can adversely affect snowy plover reproductive success. Therefore, the plan will protect plover habitat, and thus it is consistent with the standard to avoid significant disruption.

Another question before the Commission is the issue of nesting plovers occurring in the area that will remain open for recreation use (see Table 1, below, from the Air Force's 2004 *Biological Assessment* for Western Snowy Plover Management on VAFB). In past years, the plovers have nested on the open portions of these beaches, but in relatively low numbers. Therefore, the use of these open beaches is not likely to significantly affect nesting plovers.

In addition, in previous years the Air Force used symbolic exclosures (a chain or rope fence generally around a nest) to protect nests in the open section and, if necessary, it will continue to use this feature during the 2005-2009 nesting seasons. Therefore, the Commission finds that the proposed recreational uses identified in the Air Force's consistency determination will not significantly affect the ESHA.

3. Predator Management. The proposed five-year Beach Management Plan also involves the management of predators, in order to reduce snowy plover nest and chick loss from predation. Because of this purpose, the plan will protect this sensitive habitat, and therefore, is dependent on this resource.

The second requirement of the Coastal Act's ESHA policy is that the proposed activity avoids significant disruption to the sensitive resource. Predator management is necessary to protect this species for the following reasons: 1) the bird nests on the ground in loose colonies and relies mostly on camouflage as its protection from predation; 2) human activities and invasive plants have eliminated much of the plover's nesting habitat, and thus the remaining habitat is much more sensitive to predation; and 3) notwithstanding population increases at Vandenberg AFB in recent years, the Pacific Coast western snowy plover population has declined in recent years. Because of these concerns, predator management is necessary to protect the plover, reduce future declines in the population, and increase nesting success.

Past monitoring shows that predators are responsible for the loss of as much as 80% of the failed plover nests during a nesting season. The following two tables below put predation in the context of other causes for nest failure.

Table 1: Percent of failed nests attributed to various causes.²

Year	Predation		Human		Abandoned		Surf or Wind		Other Causes	
	North	South	North	South	North	South	North	South	North	South
1994	51	51	0	1	1	5	7	15	41	28
1995	40	32	0	0	9	2	12	36	39	30
1996	54	38	0	3	4	2	19	36	23	22
1997	65	64	0	0.05	2	3	5	5	28	28
1998	80	73	0	4	6	7	3	7	11	9
1999	14	53	0	8	29	11	43	17	14	11
2000	60	82	0	0	10	3	20	8	10	7
2001	70	57	0	0	0	8	7	22	23	13
2002	54	42	0	0	17	7	13	39	16	12

² Modified from Western Snowy Plovers on Vandenberg Air Force Base, 2000 final Report, Thomas E. Applegate and Sandra J. Schultz, January 2, 2001, p. 22.

Table 11. Distribution of failed nests by beach sector on Vandenberg AFB during the 2004 breeding season. Percentages are based on number of known fate nests within each beach sector.

	Abandoned	Failed Unknown	Predator	Surf	Wind	Not Viable	TOTAL FAILED	Known Fate Nests
North Beaches								
Minuteman			9 47%	4 21%		2 11%	15 79%	19
Shuman 6 7%			58 63%	5 5%			69 75%	92
San Antonio 1 1%			48 50%	6 6%		1 1%	56 58%	96
Total North Beaches 7 3%			115 56%	15 7%		3 1%	140 68%	207
Purisima Beaches								
Purisima North							0 0%	4
Purisima Colony 1 25%						1 25%	2 50%	4
Total Purisima Beaches 1 13%						1 13%	2 25%	8
South Beaches								
Wall 3 4%	10 12%	22 26%	19 23%				54 64%	84
Surf North 4 2%	14 8%	59 32%	25 14%	2 1%	3 2%		107 58%	185
Surf South 2 2%	2 2%	37 35%	22 21%	1 1%	2 2%		66 62%	106
Total South Beaches 9 2%	26 7%	118 31%	66 18%	3 1%	5 1%		227 61%	375
Vandenberg Total 17 3%	26 4%	233 39%	81 14%	3 1%	9 2%		369 63%	590
% of Total Failed 5%	7%	63%	22%	1%	2%			

Percentages rounded to nearest whole number.

Source: 2004 Final Report, Breeding Activities of the Western Snowy Plover on Vandenberg AFB

The above tables show that the percentage of failed nests attributed to predators is relatively high and indicates that continued predator management is necessary. However, predator management must be implemented carefully, because if improperly done it could result in significant ecological effects and possibly adverse impacts to the plover. For example, if the population of the top-level terrestrial predator, the coyote, in this system is significantly reduced through predator management, it could result in increased predation by lower level predators (mesopredators), such as red foxes, raccoons, opossums, and skunks. The mesopredators may be better at nest predation than the coyotes. In addition, predator/prey relationships are complex and too much interference with this relationship could have unintended ecological and biological effects. The goal of the Air Force's Predator Management Plan is to reduce predation of the plover while minimizing ecological effects from predator management. Specifically, the plan states that:

Management actions conducted under this Plan will emphasize selective control of individual problem predators, using non-lethal techniques wherever possible in the control of native predators. VAFB's predator management decisions must also include the assessment of these actions on the larger ecosystem, with the priority being that ecosystem stability and integrity are maintained.

The primary predators that the interim plan focuses on are crows, ravens, and coyotes. These species account for most of the plover predation on the base. The Air Force proposes to use trash clean up and carrion removal as tools to reduce the presence of these animals on the beach. The Air Force proposes to conduct beach clean up weekly and continue to re-assess the situation to determine if more frequent beach clean up is necessary. Decisions to increase the frequency of the clean-up activities will balance the need to keep the beaches free of human debris with potential impacts to the plovers from conducting the clean-up activities. The Air Force believes that human trash is one of the major attractants bringing predators to the beach. By removing

this debris regularly, the Air Force hopes to reduce the number of predators attracted to the beach.

The Air Force's clean-up activities also include removal of carrion from the beach. Crows, ravens, and coyotes are scavengers that rely on carrion as part of their food source and are attracted to dead animals that wash up on the beach. The interim plan provides for removal of carrion when identified by the plover monitors. However, the decision to remove carrion will take into consideration potential impacts on the plover from the removal activities.

Crow and Raven Predation. The 2004 Final Report provides the following:

The extended and more frequent observation of ravens in the North Beaches suggests that, as was predicted during the 2003 season, this species is becoming established along the central coast of California. The devastating effect ravens can have on snowy plover nesting success is well documented from experiences at other sites where this corvid species is present (USDA-APHIS 2002).

. . . During the 2004 breeding season, two ravens were lethally removed from snowy plover breeding habitat, and six crows were lethally removed in access corridors. To ensure only animals responsible for nest losses were removed, all trapping to lethally remove corvids was accomplished either on the beach or in access corridors where they had been observed accessing the nesting beaches during the breeding season. All corvids lethally removed during the 2004 breeding season were trapped on North Vandenberg AFB.

Predator control activities have the potential to affect plover habitat by increasing human presence in the habitat. In considering this issue, the Air Force has provided for the following protocols to prevent impacts on the plover:

- In consultation with the plover monitors, the Air Force's Wildlife Biologist will make the determination to trap or kill crows and ravens;
- Authorized personnel will conduct any lethal removal;
- The Air Force's Wildlife Biologist will limit lethal removal to individuals observed to access snowy plover nesting beaches;
- Removal will occur from pre-determined locations to avoid disturbance to plovers; and
- If a particular situation requires entry into nesting habitat to remove crows, it will be carefully coordinated between snowy plover monitors and the Air Force's biologist.

With these measures, it is unlikely that the lethal removal activities will significantly disturb plovers. Therefore, the Commission finds that the lethal removal of crows and ravens will not significantly disturb plover habitat.

Coyote Predation. The coyote is another species that is responsible for a significant number of nest losses. They are the top-level predators in this area and, as such, they have a unique role in the ecosystem. This role may be important in managing snowy plover habitat by preventing other animals from preying on plovers and their eggs. Thus, the main effort in the management of coyote predation of snowy plovers is the elimination, or at least the reduction, of food sources that attract coyotes, and other predators, to the beach. To that end, the Air Force proposes to continue to remove trash and carrion regularly.

The 2004 Final Report states that:

Nest losses to coyote predation on Vandenberg AFB were significantly higher in 2004 than in the prior three years (Table 16). On North Beaches, coyote predation did not differ significantly from that recorded in the prior three years. Most nest losses to coyotes occurred once raven predation ceased.

On South Beaches, coyote predation in 2004 was significantly higher than in the prior three years (Table 16). Small mammal trapping data from adjacent upland habitat within the home ranges of the same coyotes that frequent these beaches, suggests that nest predation by coyotes was higher during the 2004 breeding season as a result of reduced small mammal population density in coastal upland areas. This could be due to regional drought conditions . . .

During the 2004 breeding season four coyotes were lethally removed from snowy plover breeding habitat during the height of the predation events. To ensure only animals responsible for nest losses were removed, all lethal removal was accomplished on nesting beaches or nearby after the target animal was followed off the beach. All coyotes that were lethally removed were on South Beaches.

The consistency determination states that the Air Force will continue to implement predator management, including coyotes, during the 2005-2009 time period in accordance with the U.S. Fish and Wildlife Service-approved Predator Management Plan, and will continue to update this plan as needed and in coordination with the Service. (The Commission previously concurred with the Predator Management Plan in the consistency determination for the 2001 nesting season, CD-046-01, which is incorporated by reference.) With the continued implementation of the Predator Management Plan, the Commission finds that the Air Force's plan for managing coyotes is the least damaging feasible alternative and includes measures to minimize ecological effects from predator management, including selective lethal removal.

Raptors and Other Predatory Birds. The Air Force's monitoring of snowy plovers on Vandenberg has not identified raptors and other predatory birds (other than crows and ravens) to be responsible for a significant amount of predation of plover nests, although there probably have been some chick and nest losses to raptors and shrikes. However, the Predator Management Plan provides for managing predation by these birds, and the Air Force focuses its management of predatory birds on capturing and relocating birds responsible for predation. As

described in the Commission's findings of concurrence with CD-039-02 for the 2002 Beach Management Plan, the Air Force outlined its approach to managing predatory birds as follows:

Upon determining that an individual predator poses a threat to snowy plovers on VAFB beaches, an effort will be undertaken to trap, band, and relocate the predator as soon as possible.

- *The determination will be made by the VAFB Wildlife Biologist upon consultation with the SCPBRG [Santa Cruz Predatory Bird Research Group] and plover monitors.*
- *Knowledge of the avian predator's habits will determine the trapping technique to employ.*
- *The decision to remove a predator must take into account the potential disturbance of the removal activity on nesting plovers relative to the potential threat of the predator. Trapping will be conducted in coordination with plover monitors and the VAFB Wildlife Biologist to avoid disturbance to plovers to the maximum extent practicable. As described elsewhere in this Plan, early identification of "plover-safe" trapping locations will minimize response time once a threat has been identified.*
- *Trapped birds will be held in a licensed and permitted rehabilitation/holding facility until they can be released back into the wild.*
- *Relocated birds will be released in an area with suitable habitat at a distance from which they would not be expected to return. The distance will be determined through consultation with the SCPBRG.*

All avian predator removal actions will be implemented by authorized personnel from SCPBRG..., under the direction of the VAFB Wildlife Biologist.³

In the past, raptors have not presented a significant threat to plover nesting success and the Air Force has only occasionally found it necessary to capture and relocate raptors. However, in other areas, raptors have resulted in substantial impacts to snowy plover reproductive success and it is necessary for the Air Force to provide the contingency for managing these birds. The plan presented by the Air Force will have minimal impacts on raptors while providing substantial benefits to the plover. Therefore, the raptor management is consistent with ESHA policies of the CCMP.

4. Temporary Shelters. As in previous years, the Air Force proposes to place four temporary shelters on the beach. The Air Force describes these shelters as follows:

We are adding to the project description, placement of a total of four (4) small shelters to provide sun and wind protection to beach patrol personnel. The shelters will provide protection from the elements (sun, rain, cold, wind, and blowing sand) and thus enable

³ 2001 Interim Predator Management Plan, pp. 11-12

personnel to maintain a more continuous presence on the beach. Shelters would be no larger than 6-ft long by 4-ft wide by 8-ft tall. They would be located at each boundary fence on Surf Beach (2 shelters total), Wall Beach (1) and Minuteman Beach (1). Shelter design will be selected to provide maximum visibility for beach patrol personnel. Shelters will be placed immediately adjacent to closure boundary fences to minimize their visual impact. Exact placement will depend on late winter beach condition and terrain, but will be above the high tide line and within view of the lower beach where violations are most likely to occur. The only site preparation will be minor hand clearing of sand if needed to create level surfaces for the shelters. To the extent possible, shelters will be sited in locations that are naturally relatively level, where minimal site preparation will be needed. The roofs of the shelters will be affixed with Nixalite or other antiperching material to prevent predators from perching on them.

VAFB will acquire prefabricated shelters that will be fully constructed before they are placed on the beaches. Shelters will be temporary, placed prior to March 1, and removed after September 30. Shelters will be moved onto the beaches via existing access trails using a small trailer pulled by a six-wheeled all-terrain vehicle (ATV). If possible, (i.e., Santa Ynez River mouth closed) the Surf Station shelters will be brought in from the Wall Beach access trail, along the wet sand to Surf Beach. ATV speed will not exceed 5 mph on beaches and access trails. The VAFB wildlife biologist or Service-permitted snowy plover biologist will monitor shelter placement, to further ensure that disturbance to snowy plovers is minimized. Placement will be done during the same time frame in mid-late February as other nesting season preparations (sign posting, fence repairs, etc.) and therefore should not significantly increase the level of disturbance to non-nesting western snowy plovers.

As described above, the area where the Air Force proposes to place these temporary structures is an ESHA. Section 30240 provides that development within an ESHA must be dependent on the ESHA resources and must avoid significant disruptions to the habitat. The proposed shelters are dependent on the ESHA resources. Their purpose is to provide shelter for enforcement personnel and increase the presence of the enforcement staff in the area. The shelters will allow the enforcement people to have uninterrupted presence on the beach, while providing areas to rest, get shelter from the weather, and store gear. Since the purpose of these enforcement efforts is to assure that public use of the beaches does not adversely affect snowy plover nesting habitat, the enforcement program is dependent on the ESHA resources. Since the proposed shelters will enhance the Air Force's enforcement efforts, the structures are also dependent on the resources.

In addition the proposed shelters will avoid any significant disruptions on the ESHA resources. The Air Force will install the shelters prior to March 1, 2005, the beginning of the nesting season, and will remove the shelters after September 30, 2005, the end of the nesting season. The Air Force's wildlife biologist will monitor placement of the shelters to minimize impacts to nesting habitat and the Air Force will install anti-perching material on the shelters to prevent their use by predatory birds. With these measures, and other measures described in the Air Force's biological assessment, the proposed structures will not significantly disrupt the ESHA habitat, and therefore, the structures are consistent with Section 30240(a) of the Coastal Act.

Conclusion. In conclusion, the beaches on Vandenberg Air Force base support nesting snowy plovers, a federally listed threatened species. In addition, the U.S. Fish and Wildlife Service has designated these beaches as “critical habitat” for the snowy plover. Therefore, the snowy plover habitat on Vandenberg AFB is an ESHA. The purpose of the 2005-2009 Beach Management Plan is to manage and protect this ESHA and, therefore, the plan is dependent on the sensitive resource of the ESHA. In addition, the Beach Management Plan will reduce impacts to snowy plovers from human activities on beaches and from predation, and will not significantly disrupt the ESHA. Therefore, the Commission finds that the proposed plan is consistent with the ESHA policy (Section 30240) of the Coastal Act.

Substantive File Documents

1. Consistency Determinations: CD-012-94, CD-067-95, CD-019-00, CD-023-01, CD-046-01, CD-105-01, and CD-089-02 (Interim Plover Management Plans at Vandenberg Air Force Base).
2. Negative Determinations: ND-087-99, ND-020-00, ND-019-01, ND-034-01, and ND-007-04 (Modifications to Interim Plover Management Plans at Vandenberg Air Force Base).
3. Page, Gary W., et al., Distribution and Abundance of the Snowy Plover on its Western North American Breeding Grounds; Journal of Field Ornithology, 62(2): 245 - 255.
4. Final Rule for Determination of Threatened Status for the Pacific Coast Population of the Western snowy Plover; Federal Register Vol. 58, No 42, page 12864; March 5, 1993.
5. 1993 Western Snowy Plover Monitoring, Vandenberg Air Force Base, February 2, 1994.
6. Draft Environmental Assessment, Modification of Public Access Routes at Ocean Beach Vandenberg Air Force Base, California, February 22, 1994.
7. U.S. Fish and Wildlife Service, Biological Opinion on the proposal to modify recreational beach access, Ocean Beach, Vandenberg Air Force Base, February 3, 1995.
8. Draft Environmental Assessment, Modification of Public Access Routes at Ocean Beach Vandenberg Air Force Base, California, March 1995.
9. Preliminary Findings, Snowy Plover Reproductive Success on Ocean Beach, Vandenberg Air Force Base, California, U.S. Air Force, prepared for the California Coastal Commission, July 1998.
10. Draft Environmental Assessment, Beach Management and the Western Snowy Plover at Vandenberg Air Force Base, October 30, 2000.

11. Western Snowy Plovers on Vandenberg Air Force Base, 2000 Final Report, January 2, 2001.
12. Biological Opinion for Beach Management and Western Snowy Plover at Vandenberg Air Force Base for the 2001 Breeding Season (1-8-01-F-13), March 9, 2001.
13. Draft Biological Opinion for the 2002 Interim Beach Management Program for Vandenberg Air Force Base, Santa Barbara County, U.S. Fish and Wild Life Service, November 26, 2001.
14. Biological Assessment, 2003 Interim Plover Management Plan, Vandenberg Air Force Base.
15. Biological Opinion for Beach Management for the Western Snowy Plover on Vandenberg Air Force Base for the 2003 Breeding Season (1-8-03-F-13), U.S. Fish and Wildlife Service, May 12, 2003.
16. Biological Assessment, Western Snowy Plover Management on Vandenberg Air Force Base, Proposed 5-Year Plan, 2005-2009 (Updated December 14, 2004).
17. Breeding Activities of the Western Snowy Plover on Vandenberg Air Force Base, California, 2004 Final Report, SRS Technologies, December 15, 2004.